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THE FIELD STATUS OF PARASITES OF THE EUROPEAN
CORN BORER AT THE CLOSE OF THE 1945 SEASON

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The collection of overwintering larvae of the European corn borer to determine the extent of establishment, maintenance, and dispersion of its introduced parasites was again carried on at the close of the 1945 season. These collections were made from localities in which exotic parasites had been released during the summer of 1945 or in previous years. Owing to the continued cooperation of numerous entomologists 3/ in the various States, collections were made in 77 localities including samples from 16 States. Over 30,000 specimens were handled, all by the individual isolation method. The material was reared in the spring of 1946 following storage over winter. Table 1 summarizes the results of the rearings.

1/ This investigation was carried out under the direction of Charles A. Clark, (resigned) and this summary was prepared for publication under the direction of K. D. Arbuthnot.

2/ Resigned April 30, 1946.

3/ All or part of the collections of borers in Delaware, Illinois, Indiana, Iowa, Kentucky, Maryland, New Jersey, New York, Ohio, Pennsylvania, Virginia, and Wisconsin were obtained through the cooperation of State Department of Agriculture or experiment station entomologists in those States.

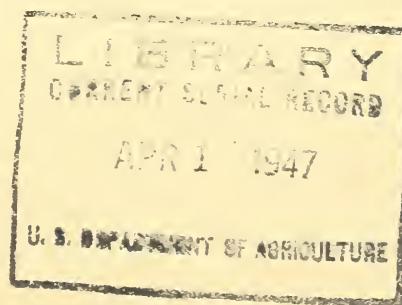


Table 1.--Number of European corn borer larvae observed for parasitization from different localities in the fall of 1945 and percentage of larvae from which the various parasites were reared.

| State and county | Township or locality | No. borers observed | Total parasitization | | | | | | |
|------------------|----------------------|---------------------------|-----------------------------------|-----------------|------------------------|---|-------------------|--------------------------|----------------|
| | | | <i>Native</i> <i>parasites</i> | <i>Hulochus</i> | <i>viridulus</i> Thom. | <i>Cnethorus</i> <i>annulipes</i> Wes. | <i>Inarcolata</i> | <i>punctatoria</i> Rösen | <i>Lydella</i> |
| DELAWARE: | | | | | | | | | |
| Kent | Locality 1 | 164 | - | 2.4 | - | - | - | - | - |
| | 2 | 151 | - | 4.0 | - | - | - | - | - |
| | 3 | 176 | - | - | - | - | - | - | 0.0 |
| New Castle | Kirkwood | 586 | 0 1/ | 4.3 | 0 | 0 | 21 | - | 4.3 |
| | Locality 2 | 162 | - | 26.5 | - | - | - | - | 26.5 |
| | 3 | 176 | 1.7 | 2.3 | - | - | - | - | 4.0 |
| Sussex | Laurel | 163 | 0 | 3.1 3/ | - | - | - | - | 3.1 |
| | Milton | 159 | 0.6 | 11.3 3/ | - | - | - | - | 12.0 |
| | Stockley | 354 | 0 | 12.3 | 0 | 0 | - | - | 0.6 |
| ILLINOIS: | | | | | | | | | |
| Kankakee | St. Anne | 59 | 0 | 16.9 | 0 | 0 | - | - | 16.9 |
| Rock Island | Black Hawk | 433 | - | 0.2 | 0.2 | 0 | - | 0.2 | 0.7 |
| | Milan | 175 | - | 0.6 | 0 | 0 | - | 1.7 | 2.3 |
| Vermilion | Grant | 58 | 0 | 10.3 | 0 | - | - | 1.7 | 12.1 |
| Whiteside | Lyndon | 353 | 0 | 1.4 | 0 | - | - | 0.8 | 2.3 |
| INDIANA: | | | | | | | | | |
| Jasper | Union | 404 | 0 | 6.0 | - | - | - | 1.2 | 7.1 |
| Tipton | Wildcat | 198 | 0 | 30.8 | 0 | - | - | 0.5 | 31.3 |
| IOWA: | | | | | | | | | |
| Cedar | Pioneer | 19 | 0 | - | - | - | - | 5.3 | 5.3 |
| | Sugar Creek | 4 | 0 | 0 | 0 | - | - | - | 0.0 |
| Clinton | Camanche | 37 | 0 | 10.8 | 0 | 0 | 0 | 0 | 10.8 |
| | Eden | 33 | 0 | - | 3.0 | - | - | 3.0 | 0.0 |
| | Orange | 10 | 0 | 0 | - | - | - | - | 0.0 |
| | Welton | 16 | 0 | - | - | - | - | - | 0.0 |
| Des Moines | Flint River | 14 | 0 | 7.1 | - | - | - | - | 7.1 |
| | Jackson | 19 | 0 | - | - | - | - | - | 0.0 |
| | Washington | 23 | 0 | - | - | - | - | 8.7 | 8.7 |
| Jones | Cass | 20 | 0 | 0 | - | - | - | 5.0 | 5.0 |
| | Jackson | 72 | 0 | - | 0 | 0 | 0 | 4.2 | 4.2 |
| | Jackson | 415 | 0 | - | 0 | 0 | 0 | 2.2 | 2.2 |
| Muscatine | Sweetland | 575 | 0 | 9.9 | 0.2 | - | 0 | 2.8 | 12.9 |
| | Lake (L) | 484 | 0 | - | 0 | - | - | 3.7 | 3.7 |
| Tama | Indian Village | 43 | 0 | - | 0 | - | - | 4.7 | 4.7 |
| | Otter Creek | 48 | 0 | - | - | - | - | - | 0.0 |
| | Perry | 25 | 0 | - | - | - | - | 12.0 | 12.0 |
| KENTUCKY: | | | | | | | | | |
| Boyle | Danville | 85 | - | 1.8 | - | - | - | - | 1.8 |
| Fayette | Lexington | 187 | 0 | 28.0 | 0 | - | - | - | 28.0 |

Table 1.--(Continued)

| State and county | Township or locality | No. | Total parasitization | | | | | | | |
|--|----------------------------------|-------|----------------------|-------|------|-----|-----|------|------|---|
| | | | % | % | % | % | % | % | % | % |
| MASSACHUSETTS: | | | | | | | | | | |
| Middlesex | Concord (A) | 1,234 | 7.2 | 0.1 | 12.5 | 0 | - | 0.1 | 20.0 | |
| MICHIGAN | | | | | | | | | | |
| Monroe | Erie | 344 | 0 | 18.6 | 0 | 0 | 0.6 | - | 19.2 | |
| NEW ENGLAND: | | | | | | | | | | |
| Connecticut, Massachusetts, and Rhode Island | 6,123 | 18.5 | 0.6 | 5.3 | 0.2 | 0 | 14 | 24.6 | | |
| NEW JERSEY: | | | | | | | | | | |
| Atlantic | Hammonton | 240 | - | 15.83 | - | - | - | 0.8 | 16.7 | |
| Vergen | Paramus | 222 | 2.7 | 6.32 | - | 0 | - | - | 9.0 | |
| Burlington | Burlington | 2,989 | 0.4 | 21.5 | 0.2 | 0 | - | - | 22.1 | |
| | Woodland | 237 | - | 10.1 | - | - | - | 2.1 | 12.2 | |
| Cape May | Lower | 133 | 3.8 | 11.32 | - | - | - | - | 15.0 | |
| Cumberland | Millville | 247 | 0 | 4.52 | - | - | - | - | 4.5 | |
| Essex | Livingston | 178 | 2.2 | 6.72 | - | - | - | - | 9.0 | |
| Hunterdon | Califon | 229 | 0 | 16.6 | - | - | - | - | 16.6 | |
| | Delaware (Sergeantsville) | 234 | 0 | 33.32 | - | - | - | - | 33.3 | |
| Mercer | Clarksville | 214 | 0 | 23.82 | - | - | - | 0.5 | 24.3 | |
| | Washington (Robinsville) | 211 | 0 | 24.22 | - | 0 | - | 0.5 | 24.6 | |
| Middlesex | Monroe (Jamesburg) | 221 | 7.2 | 20.42 | 5.42 | 0.5 | - | 0.5 | 33.9 | |
| | Piscataway (New Market) | 221 | - | 10.42 | - | - | - | - | 10.4 | |
| Monmouth | Atlantic | 2,835 | 16.5 | 9.92 | 4.2 | 0 | - | 0.1 | 30.8 | |
| Morris | Roxbury (Succasunna) | 227 | 0 | 7.02 | - | - | - | - | 7.0 | |
| Ocean | Berkeley (Bayville) | 239 | - | 19.22 | 0.42 | - | - | - | 19.7 | |
| Passaic | Wayne | 218 | 0.92 | 6.032 | - | - | - | - | 6.9 | |
| Salem | Piles Grove | 238 | 0 | 13.0 | - | - | - | - | 13.0 | |
| Somerset | Somerville | 213 | 0 | 38.52 | - | - | - | - | 38.5 | |
| Sussex | Sparta | 181 | 1.1 | 3.92 | - | - | - | - | 5.0 | |
| Warren | White (Hazen) | 211 | 0 | 3.32 | - | - | - | 1.4 | 4.7 | |
| NEW YORK: | | | | | | | | | | |
| Columbia | Kinderhook | 470 | 31.3 | 2.8 | - | 0 | 0 | 0.2 | 34.3 | |
| Erie | Cattaraugus (Indian Reservation) | 63 | 0 | 1.5 | 22.2 | - | 0 | - | 23.6 | |

Table 1.--(Continued)

| State and county | Township or locality | Borers observed | Native parasites | | | | | | | |
|------------------|----------------------|-----------------|------------------|------|---|-----|-----|---|-----|------|
| | | | No. | % | % | % | % | % | % | % |
| OHIO: | | | | | | | | | | |
| Erie | Perkins | 501 | 0 | 19.4 | 0 | 0 | 1.2 | - | - | 20.6 |
| Hamilton | Miami | 377 | 0 | 20.2 | 0 | - | - | - | - | 20.2 |
| Lucas | Jerusalem (D) | 907 | 0 | 8.9 | 0 | 0 | 0 | - | 0.1 | 9.0 |
| | Jerusalem (E) | 602 | 0 | 0.8 | 0 | 0 | 0 | - | - | 0.8 |
| | Adams (F) | 571 | 0 | 1.2 | 0 | 0.2 | - | - | 1.1 | 2.5 |
| | Monclova (G) | 577 | - | - | - | - | - | - | - | 0 |
| Van Wert | Ridge | 413 | - | 0.5 | - | - | - | - | - | 0.5 |
| VIRGINIA: | | | | | | | | | | |
| Princess Anne | Back Bay | 276 | 0 | 9.8 | 0 | 0 | - | - | - | 9.8 |
| WISCONSIN: | | | | | | | | | | |
| Calumet | Charlestown | 196 | 0 | - | - | - | - | - | 0.5 | 0.5 |
| Dane | Fitchburg | 195 | - | - | - | - | 0 | - | 1.0 | 1.0 |
| Door | Sevastopol | 185 | 0 | - | 0 | - | - | - | - | 0 |
| Jefferson | Waterloo | 320 | 0 | 1.3 | 0 | 0 | - | - | - | 1.3 |
| Kenosha | Somers | 285 | 0.4 | - | - | - | - | - | - | 0.4 |
| Ozaukee | Saukville | 397 | 0 | 0 | - | 0 | - | - | - | 0 |
| Rock | Dougan | 592 | - | 2.4 | - | - | - | - | 0.2 | 2.5 |
| Sheboygan | Plymouth | 348 | 0 | - | - | - | - | - | - | 0 |

1/ A is used to indicate that the species was released but not recovered among the borers collected in this season.

2/ A dash (-) indicates that the species has not been released and did not appear among the borers collected in this season.

3/ In this locality the species was not released but since it was present among the borers collected this season it had probably spread from other localities.

4/ T indicates a trace or less than 0.05 percent.

DELAWARE

New Castle County, Kirkwood Township. A 5-mile radius showed an average of 4.3 percent parasitization by Lydella grisescens.

Sussex County, Stockley Township. A survey of 154 square miles showed that parasitization by Lydella grisescens was about the same as in 1944.

INDIANA

Tipton County, Wildcat Township. Lydella grisescens was extremely high, with 30.8 percent of the borers parasitized.

IOWA

Muscatine County, Sweetland (X), a special study area. Lydella grisescens and Inareolata punctoria were present but no exotic species was found in Lake Township, locality (L).

MASSACHUSETTS

Middlesex County, Concord Township, locality (A), a special study point 12 square miles in area. Macrocentrus gifuensis was present in 5.2 percent of the borers, a decided increase from the 1.4 percent of last year. Parasitization by Inareolata punctoria was about the same as in 1944.

MICHIGAN

Monroe County, Erie Township. The percentage of Lydella grisescens was slightly more than in 1944.

NEW ENGLAND

In 1945 an area of 11,900 square miles was sampled by taking about 50 borers from 119 locations each representing 100 square miles. This combined the two main areas surveyed last year with extra sections, added to cover the space between them. Macrocentrus gifuensis averaged 18.5 percent with the high parasitization of former years near the older liberation points rapidly spreading over a wider area. Lydella grisescens remained scarce in the region. Inareolata punctoria showed the greatest increase in the Connecticut River Valley section. Chelonus annulipes Wes. was found to be present, but as in the past it occurred infrequently and in small numbers.

NEW JERSEY

Lydella grisescens has spread over most of the State.

The Burlington County survey of 250 square miles, part of which is in the State of Pennsylvania, showed that Lydella grisescens, Macrocentrus gifuensis, and Inareolata punctoria are becoming established. This is a large increase over 1944, when it was about 12.0 percent. The portion in Pennsylvania showed 28.3 percent of Lydella grisescens.

NEW JERSEY (Continued)

The Monmouth County survey, centered at Atlantic, showed a 30.8 percent parasitization by all species as compared with about 10.0 percent in the last two years. Macrocentrus gifuensis increased from 6.8 percent in 1944 to 16.5 percent in this year. Lydella grisescens increased from 1.9 percent to 9.9 percent and Inareolata punctoria increased from 1.3 percent to 4.2 percent.

NEW YORK

Cattaraugus Indian Reservation continues to be the outstanding Inareolata punctoria point, with 22.2 percent average from four collections as compared with 15.1 percent in 1944. Lydella grisescens showed 1.5 percent parasitism while none were recovered last year.

OHIO

Perkins Township in Erie County showed 19.4 percent Lydella grisescens as compared with about 12 percent in the last 2 years. Eulophus viridulus accounted for 1.2 percent as compared with only 0.5 percent in the last 2 years.

Borers were collected in four special study localities, each containing 12 square miles, in Lucas County. In three of these localities, (D), (E), and (F), Lydella grisescens was reared from the borers but it did not appear in locality (G). Chelonus annulipes was present only in locality (F) and Eulophus viridulus did not appear among these borers this year.

In Van Wert Township, Van Wert County, 0.5 percent of the borers produced Lydella grisescens, showing establishment at a new point.

VIRGINIA

Back Bay Township in Princess Anne County showed a slight decrease of Lydella grisescens from last year.